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A new species of the genus *Selenocosmia* Ausserer, 1871 (Araneae: Theraphosidae) from the karst landscapes of Meghalaya, India

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Araneae;
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burrowing theraphosid;
tarantula;
limestone;
taxonomy;
description;
new species;
metallic blue;
India.

Abstract. – We describe a new species: *Selenocosmia meghalayensis* **sp**. **nov**. from East Khasi Hills, Meghalaya, north eastern India, based on three female specimens. The new species is diagnosed by a unique combination of morphological characters, with particular emphasis on the structure of the spermathecae, as well as somatic characters including coloration, setation, and morphometrics. Detailed descriptions and measurements, are provided. Notes on habitat and distribution map are included.

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Introduction

The family Theraphosidae Thorell, 1869, currently comprising 1,156 species in 186 genera worldwide (World Spider Catalog, 2026), represents the most speciose lineage within the infraorder Mygalomorphae. In India, theraphosids are represented by six subfamilies, namely Eumenophorinae Pocock 1897, Ischnocolinae Simon 1892, Poecilotherinae Schmidt 1995, Selenocosmiinae Simon 1889, Selenogyrinae Hirst 1908, Thrigmopoeinae Pocock 1900, with 67 described species in 16 genera. Among these, the subfamily Selenocosmiinae Simon, 1892 is represented in India by four genera: *Chilobrachys* Karsch, 1892; *Lyrognathus* Pocock, 1895; *Haplocosmia* Schmidt & von Wirth, 1996; and *Selenocosmia* Ausserer, 1871, comprising a total of 16 species (World Spider Catalog, 2026).

The genus *Selenocosmia* currently comprises 41 valid species and is widely distributed across South Asia, Southeast Asia, and the Australasian region (World Spider Catalog).

In India, the genus has historically been represented by two species: *Selenocosmia sutherlandi* Gravely, 1935 and *Selenocosmia kulluensis* Chamberlin, 1917, both recorded from the Himalayan biogeographic region and described exclusively on the basis of male specimens. However, several Indian species historically assigned to *Selenocosmia* have been re-evaluated following detailed taxonomic revisions. *Selenocosmia himalayana* Pocock, 1899, originally described from the Himalayan region, was transferred to the genus *Haplocosmia* based on diagnostic morphological characters that distinguish it from *Selenocosmia* sensu stricto (Raven, 1985). Similarly, *Lyrognathus pugnax* Pocock, 1900, originally described from female specimens collected in Shillong, Meghalaya, was later cited as *Selenocosmia pugnax* by Gravely (1935). However, a comprehensive revision by West & Nunn (2010) demonstrated that *Lyrognathus pugnax* is a junior synonym of *Lyrognathus crotalus* Pocock, 1895. These taxonomic reassignments illustrate how early interpretations of Indian theraphosid diversity were shaped by broadly defined generic concepts and underscore the importance of detailed morphological analyses in resolving species-level taxonomy.

During recent field surveys conducted through Meghalaya in Northeast India additional selenocosmiine material was collected. Detailed morphological examination revealed an undescribed species of *Selenocosmia*, diagnosable by the presence of unilobed spermathecae, a well-developed maxillary stridulatory lyra composed of scimitar-shaped lyra setae, non-incrassate tibia IV, and the absence of dense penicillate retrolateral setal brushes on tibia and metatarsus IV (Yu *et al.*, 2021, Lin *et al.*, 2022).

Here, we describe a new species of the genus *Selenocosmia* from India, *Selenocosmia meghalayensis* **sp**. **nov**., based on material collected from Meghalaya.

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Methods

Specimens were hand-collected, and live individuals were photographed using a Canon 60D (Canon) equipped with a macro lens (60 mm) and Speedlight 430 EX II external flash. Left leg I of a holotype female (NRC-AA-3061) was collected in 99.9% molecular-grade ethanol and stored at –20°C for genetic analyses. Specimens were then euthanized using isoflurane, fixed in 6% formaldehyde for ~24 hours, washed and kept in tap water for ~12 hours, and then finally transferred to 70% ethanol for long-term storage. Spermathecae were dissected and cleared using needles under ZEISS Stemi 305 stereo dissecting microscope, kept in clove oil for 1 hour, and transferred to 70% ethanol. The left chelicera of the holotype was dissected and stored in 70% ethanol. Measurements of body parts were obtained consistently from the left side of each specimen (except for damaged leg segments, which were obtained from the other side) using a Mitutoyo digital vernier calliper (to the nearest 0.01 mm). All measurements are in millimetres. The measurements of legs are shown as: total length (femur, patella, tibia, metatarsus, tarsus). Eye measurements: distances between eyes, measured at the narrowest points, and eyes diameter. The holotype female, along with two paratype females, are deposited in the Museum and Research Collection Facility at the National Centre for Biological Sciences (NCBS), Bengaluru, Karnataka, India. Comparative material for the study was examined from the collection of the Natural History Museum (NHMUK), London.

Abbreviations

ALE: Anterior lateral eyes
AME: Anterior median eyes
d: Dorsal
fe: Femur
MOA: Median ocular area
MOQ: Median ocular quadrate
mt: Metatarsus
p: Prolateral
pa: Patella
PLE: Posterior lateral eyes
PLS: Posterior lateral spinnerets
PME: Posterior median eyes
PMS: Posterior median spinnerets
NHMUK – Natural History Museum, London;
r: Retrolateral
ta: Tarsus
ti: Tibia
v: Ventral

Type Material examined

- *Annandaliella travancorica* Hirst, 1909, holotype female (BMNH 16.5.2.13), Travancore, Kerala, India.
- *Chilobrachyus furmosus* (Pocock 1895), holotype female (NHM 09.10.7.17), North India.
- *Chilobrachys andersoni* (Pocock 1895), male paratype, (BMNH 1891.10.15.6), India.
- *Chilobrachys hardwicki* (Pocock 1895), female, (BMNH 1899.7.14.2), Chota Nagpur, India.
- *Haplocosmia himalayana,* male (BMNH 0.9.6.1), Himalaya, India
- *Lyrognathus crotalus* Pocock 1895, holotype female, (BMNH 1854.16), Assam State, northeastern India,
- *Lyrognathus pugnax* Pocock 1900, holotype female, (BMNH 1895.1.28.1), Shillong, Meghalaya State, northeastern India.
- *Lyrognathus saltator* Pocock 1900, holotype female, (BMNH 1897.6.24.24), North Khasi Hill, Meghalaya State, Northeast India.
- *Plesiophrictus collinus* (Pocock, 1899), holotype female (NHMUK 19.16.29), Yercaud in Shevaroy Hills, Tamil Nadu, India.
- *Plesiophrictus millardi* Pocock, 1899, male (NHMUK 99.11 2.234), Matheran, Raighad District, Maharashtra, India; topotype male BNHS SP-62, Matheran, Raighad District, Maharashtra, India.
- *Selenogyrus caeruleus* Pocock, 1897, holotype female (BMNH 1896.12.20.21), Sierra Leone, Africa.

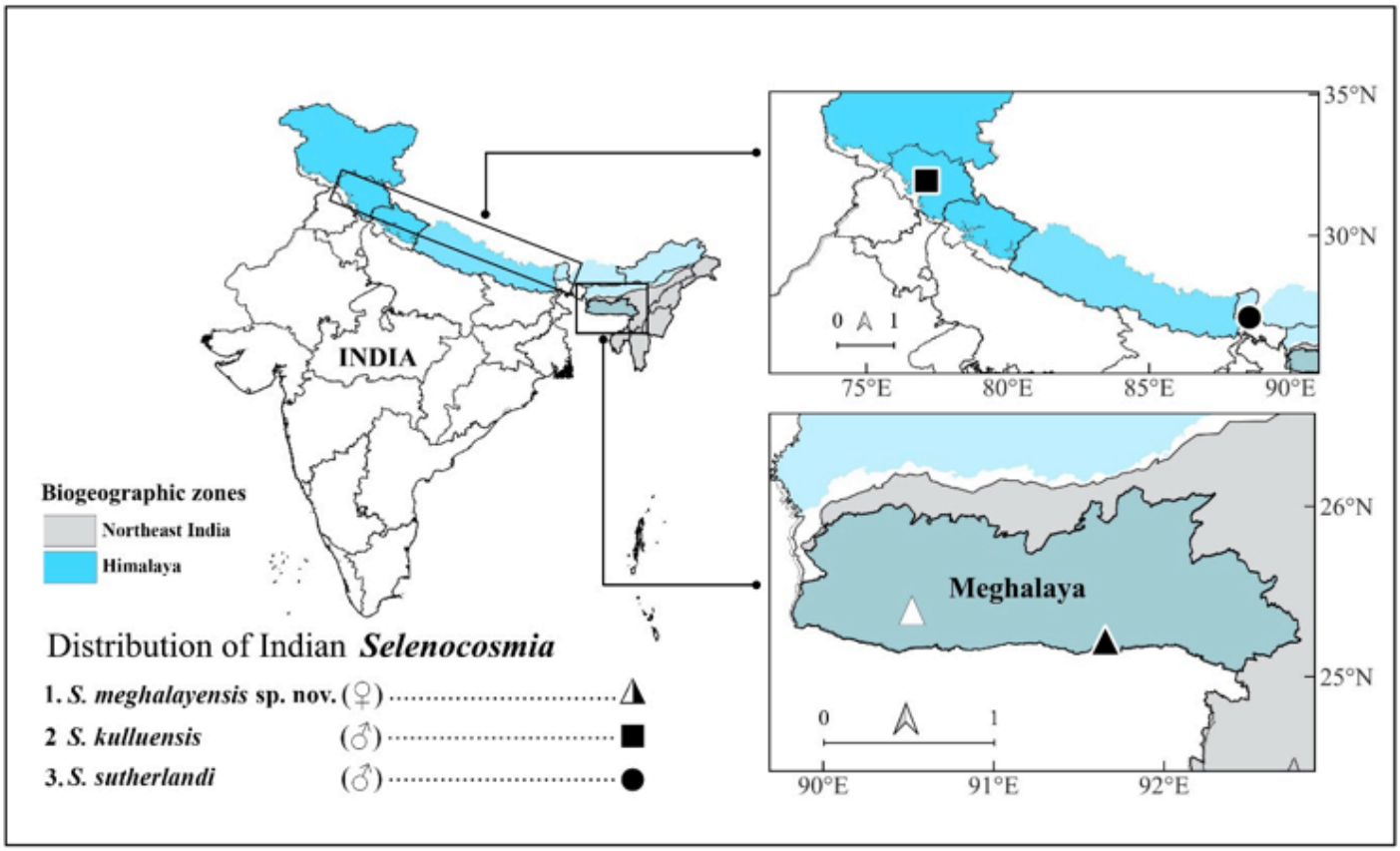

Fig. 1. Distribution of *Selenocosmia* Ausserer, 1871 in India: solid black indicates type localities of all known species, and solid white represent additional records from India.

Fig. **2**. *Selenocosmia meghalayensis* **sp**. **nov**., live female. **A**. Female holotype (NRC-AB-0657). **B**. Female paratype (NRC-AB-0658).

Taxonomy

Genus ***Selenocosmia*** Ausserer, 1871

Type. – *Mygale javanensis* Walckenaer, 1837.

Diagnosis. – See Raven, 1985, Zhu & Zhang, 2008, Kun Yu 2021.

Selenocosmia meghalayensis **sp**. **nov**. Sanap, Kadam, Thackeray & Rajkumar 2026

(Fig. 1, 2A-B, 3A-D, 4A-H, 5A-F, 6A-D)

ZooBank: https://zoobank.org/2FE13007-825D-47A4-98B3-AC99FA34ED2F

Holotype, ♀ (NRC-AB-0657), India, Laitkynsew Viewpoint Road, East Khasi Hills, Meghalaya, 25.21155°N, 91.65622°E; 741 m elev, leg. Rajesh Sanap, Aristone, Yogendra Satam, and Hep.

Paratypes

- **1** ♀ (NRC-AB-0658), same data as holotype.
- **1** ♀ (NRC-AB-0659), India, South Garo Hills, Meghalaya (25.3425732°N 90.5125747°E, 231 m elev.,12 April 2022, leg. Gautam Kadam.

Etymology. – The specific epithet is a noun in apposition referring to Meghalaya, the Indian state from which the new species was collected.

Diagnosis. – This species closely resembles *Selenocosmia longiembola* in general habitus but It can be distinguished from *Selenocosmia longiembola* by the spermathecae, which are distally longitudinally flattened, directed outward, and form a semi-loop or U-shaped structure with a rounded apex. In contrast, *Selenocosmia longiembola* possesses elongate, unilobed spermathecae that are clearly defined and sclerotized and bear distinct stalks.

Description of the holotype (NRC-AB-0657)

– TL 25.8 (excluding chelicerae), carapace. 10.68 long, 8.71 wide; carapace brown covered with short brown setae. Fovea slightly procurved. eyes in two row, posterior row slightly retro curved. eye group 0.97 long, 1.91 wide (Fig. 3A, C). Eye sizes ALE 0.39, AME 0.43, PLE 0.42, PME 0.31. Distance between the eyes: ALE–ALE 1.27; ALE–PLE 0.21; ALE–AME 0.13; AME–PLE 0.36; AME–PME 0.11; AME–AME 0.17; PLE–PME 0.05; PME–PME 0.97; PLE–PLE 1.37; MOA 0.85 long, anterior width 1.07, posterior width 1.32. Chelicerae 6.78 long dark orangish brown, covered with brown setae, 11 promarginal teeth, basal cheliceral groove bearing ~90 granules; without peg setae on the inner surface; strikers' needle-like (Fig. 4A-D). Labium 1.61 long, 2.32 wide, with ~350 cuspules; cuspules similar in size to those on the maxillae (Fig. 3D). Maxilla. 4.22 long, 3.09 wide, with well-developed stridulating lyra with a sharp process

Fig. **3**. *Selenocosmia meghalayensis* **sp**. **nov**., holotype female (NRC-AB-0657). **A**. Dorsal view. **B**. Ventral view. **C**. Eyes. **D**. Sternum. Scale bar: A-B. 5 mm; C. 0.5 mm; D. 1 mm.

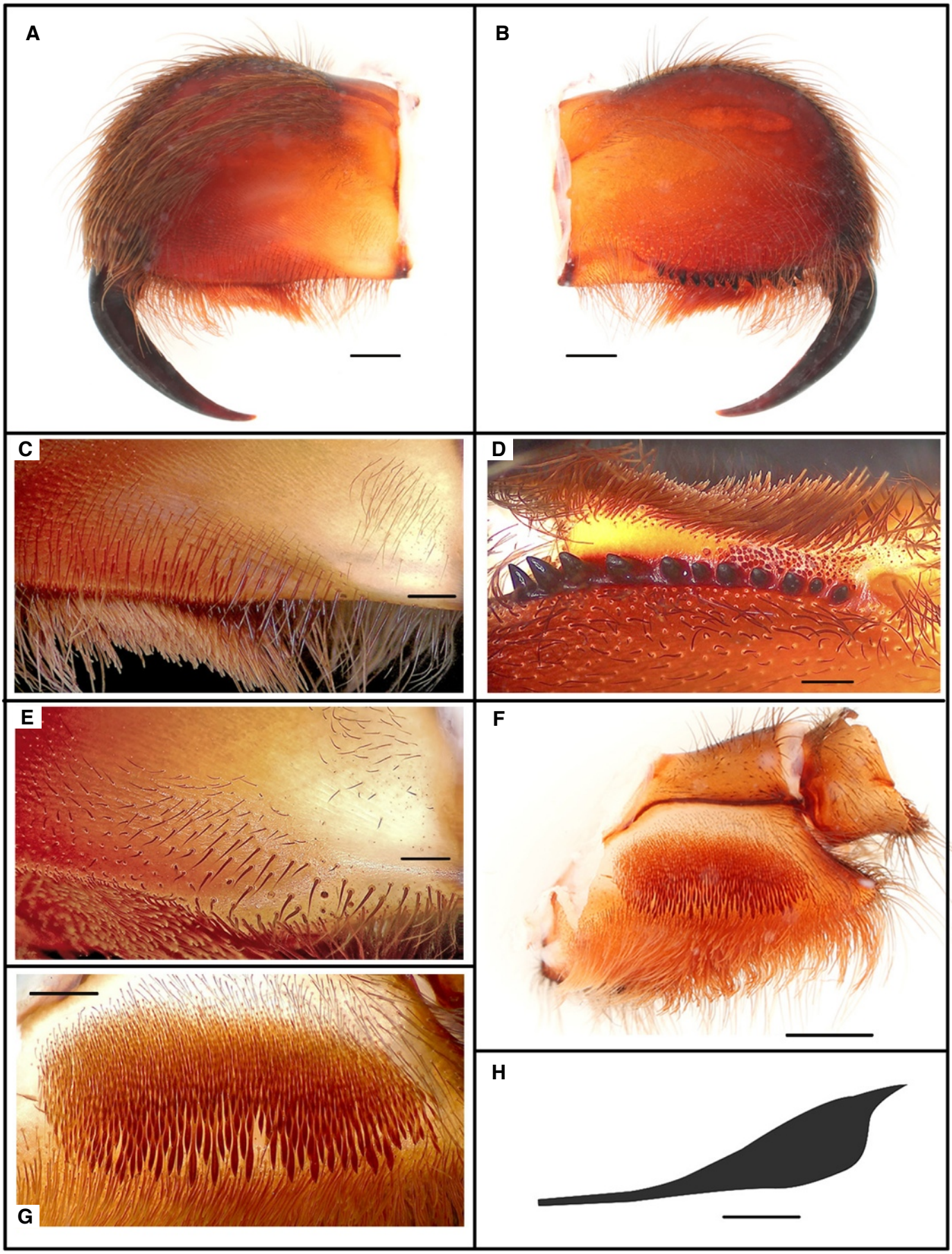

Fig. **4**. *Selenocosmia meghalayensis* **sp**. **nov**., holotype female (NRC-AB-0657). **A**. Left chelicerae, retrolateral view. **B**. Prolateral view. **C**. Chelicerae striker, retrolateral view. **D**. Close up of chelicerae denticles. **E**. Close up of chelicerae striker, ventral view. **F**. Left palp maxillae. **G**-**H**. Maxillae and lyras, prolateral view. **H**. Illustration of stridulating setae on the lyra. Scale bar. A, B, F. 1 mm; C, E, G. 0.5 mm; I. 0.1 mm.

presents on the tip, ~260 cuspules concentrated in a roughly triangular region at the anterior corner on each side (Fig. 4F-H). Sternum 4.82 long, 4.70 wide, covered with black setae, bearing three pairs of sigillae. sigilla anterior pair 0.14 wide, 0.13 long, situated marginal; median pair, 0.15 wide and 0.28 long, situated marginal; posterior pair, 0.27 wide and 0.74 long, situated 0.54 from the sternal margin of coxa III (Fig. 3B). Abdomen hirsute, ovel and brown with blue metallic sheen, 15.12 long, 11.28 wide (Fig.3A-B). Spinnerets. PMS 1.08 long. PLS total length 6.30 with segment length (basal to apical) 2.24, 1.85, and 2.20. Legs covered with brown dense setae. In life, leg I–IV bearing iridescent metallic blue sheen dorsally. Femora I-IV densely clothed with dark brown setae, intermixed with iridescent bluish to steel-blue sheen setae, giving a subtle metallic appearance. Coxae and trochanters dorsally covered with pinkish metallic setae, intermixed with both long and short brown setae (Fig. 2A). Legs measurements: leg I 24.87 (7.63, 4.80, 5.45, 4.33, 2.66), leg II 20.97 (6.57, 4.09, 4.26, 3.68, 2.37), leg III 19.73 (5.88, 3.60, 3.53, 4.01, 2.71), leg IV 28.24 (7.98, 4.21, 6.41, 6.80, 2.84), Palp 14.54 (5.27, 3.03, 3.00, -, 3.27). Spination: metatarsus I, v1 (apical); metatarsus II, v3 (apical); metatarsus III, v3, p1, d2 (apical); metatarsus IV, v3, d1 (apical); absent elsewhere (Fig 5A-D). Scopula on metatarsi and tarsi IV cracked by a narrow band of macrosetae, scopula on leg I–III not cracked (Fig. 5A-D). Claws paired claws on tarsi I-III and tarsus IV with three claws. Trichobothria tarsus I with 24 clavate and 15 long and short filiform trichobothria arranged in two rows; tarsus II with 16 clavate and 19 long and short filiform trichobothria; tarsus III with 22 clavate and 14 long and short filiform trichobothria; tarsus IV with 24 clavate and 15 long and short filiform trichobothria; palpal tarsus with 20 clavate and 14 long and short filiform trichobothria.

Spermatheca. – Unilobed and elongate, arising from a broad membranous base, each approximately 2.09 long, 0.53 wide at the base; longitudinally flattened, with sclerotized stalk, oriented outward forming a semi-loop or U-shape with a rounded edge (Fig. 5E).

Paratype NRC-AB-0658

– TL 28.74 (excluding chelicerae), carapace. 10.10 long, 8.10 wide; carapace brown covered with short brown setae. Fovea procurved. eyes in two row, posterior row slightly retro curved. eye group 0.93 long, 1.78 wide. Eye sizes ALE 0.36, AME 0.46, PLE 0.37, PME 0.32. Distance between the eyes: ALE–ALE 1.15; ALE–PLE 0.25; ALE–AME 0.13; AME–PLE 0.36; AME–PME 0.12; AME–AME 0.17; PLE–PME 0.05; PME–PME 0.91; PLE–PLE 1.31; MOA 0.81 long, anterior width 0.99, posterior width 1.23. Chelicerae 6.71 long dark orangish brown, covered with brown setae, 10 promarginal teeth, basal cheliceral groove bearing ~60 granules; without peg setae on the inner surface; strikers' needle-like. Labium 1.55 long, 2.18 wide, with ~377 cuspules; cuspules similar in size to those on the maxillae. Maxilla. 4.30 long, 3.14 wide, with well-developed stridulating lyra, ~240 cuspules concentrated in a roughly triangular region at the anterior corner on each side. Sternum 4.91 long, 4.75 wide, dark brown, covered with black setae, bearing three pairs of sigillae. sigilla anterior pair 0.19 wide, 0.20 long, situated marginal; median pair, 0.21 wide and 0.25 long, situated marginal; posterior pair, 0.31 wide, 0.88 long, situated 0.75 from the sternal margin of coxa III. Abdomen brown, 18.15 long, 13.26 wide, oval, with blue metallic sheen, hirsute. Spinnerets. PMS 1.11 long. PLS total length 6.12 with segment length (basal to apical) 2.19, 1.82, and 2.11 Legs covered with brown dense setae. In life (Fig. 2B), legs I–IV bearing slightly iridescent metallic blue sheen dorsally. Femora densely clothed with dark setae, intermixed with iridescent bluish to steel-blue sheen setae, giving a subtle metallic appearance. Leg IV darker than other legs. Coxae and trochanters dorsally covered with pinkish metallic setae, intermixed with both long and short brown setae. leg I 24.87 (7.80, 4.60, 5.20, 3.90, 2.67), leg II 20.97 (6.57, 4.15, 4.28, 3.70, 2.40), leg III 19.73 (5.89, 3.48, 3.57, 4.01, 2.41), leg IV 28.24 (7.70, 4.10, 6.26, 6.77, 2.73), Palp 14.54 (5.19, 3.26, 3.17, -, 3.24). Spination metatarsus I, v1 (apical); metatarsus II, v3 (apical); metatarsus III, v3, p2, d1 (apical); metatarsus IV, v4 (apical); absent elsewhere (Fig 5A-D). Scopula on metatarsi and tarsi IV cracked by a narrow band of macrosetae, scopula on leg I–III not cracked. Claws: paired claws on tarsi I-III and tarsus IV with three claws. Trichobothria tarsus I with 27 clavate and 14 long and short filiform trichobothria arranged in two rows; tarsus II with 20 clavate and 18 long and short filiform trichobothria; tarsus III with 22 clavate and 18 long and short filiform trichobothria; tarsus IV with 24 clavate and 16 long and short filiform trichobothria; palpal tarsus with 21 clavate and 16 long and short filiform trichobothria.

Spermatheca. – Unilobed long and slender, arising from a broad membranous base, each approximately 2.22 long, 0.53 wide at the base; longitudinally flattened, with sclerotized stalks, oriented outward forming a semi-loop or U-shape with a rounded edge (Fig. 5F).

Distribution and natural history. – The burrows from which females were collected were situated on mud-bunds or mud walls at approximately ~1 m above ground and varied in size. Within a ~1 km² study area, a total of 20 burrows were recorded, indicating a moderate local density. Each burrow typically had a single silk-covered entrance, although double entrances were observed in three instances. The burrows were ~400–500 mm deep, with an internal diameter of about 40 mm. Some individuals were observed at the burrow entrances (n=4), while in others, the entrances were completely covered with silk (n = 5). (Fig 6). However, individuals from Garo hills, the burrows were close proximity around 1 ft with minimal silk surrounded the entrances. Interestingly one active burrow was recorded in a marshy area. The habitat in this region consisted of evergreen forest with dense canopy cover. Other theraphosid species, including *Chilobrachys* sp. and *Lyrognathus* sp., were also observed in close proximity. However, the observed individuals were juveniles and could not therefore be identified to the species-level.

At present, the species is known only from the Khasi Hills and Garo Hills, Meghalaya, India. Although the species currently occurs in relatively undisturbed habitats, increasing developmental activities such as mining, plantation expansion, and jhum cultivation in both the Khasi Hills and Garo Hills may pose potential threats to its population in the future.

Discussion

Selenocosmia was described by Ausserer in 1871 and presently contains over 41 known species globally, with widespread distribution across South Asia, Southeast Asia, and the Australasian region (World Spider Catalog, 2026). However, despite remarkable progress in systematic studies on tarantulas in recent times, the species diversity and taxonomy of *Selenocosmia* remain unrevised. The generic delimitation and relationships between *Selenocosmia*, *Phlogius*, *Chilocosmia*, and *Selenopelma* have long been disputed (Schmidt & von Wirth, 1992; Schmidt, 1995; Raven, 2000; Schmidt, 2015). Raven proposed to combine most genera and placed *Selenopelma* Schmidt & Krause, which was established based on the northern-Vietnamese species *Selenopelma kovariki* Schmidt & Krause, 1995, as a junior synonym of *Selenocosmia* (Raven, 1985; Raven, 2000). In a recent taxonomic study on Chinese Selenocosmiinae, Yu *et al.* (2022) examined the topotypes of *Selenopelma kovariki* and considered that most *Selenocosmia* species from China are closely related to *Selenopelma kovariki* and show some characters obviously different from the type species *Selenocosmia javanensis*). Nonetheless, most Chinese species were assigned to *Selenocosmia* based on Raven's work (Zhu & Zhang, 2008). Similarly, based on morphology, *Selenocosmia meghalayensis* resembles northern-Vietnamese *Selenopelma*-like species and shows obvious distinction from *Selenocosmia javanensis* (unilobed vulva, longitudinally flat distal spermathecae, with rounded edges, needle-formed strikers, and a sharp process at the tip of stridulating setae in *Selenocosmia meghalayensis* versus bilobed and distally bulbous spermathecae, scimitar-shaped stickers, and tip of stridulating setae without a sharp

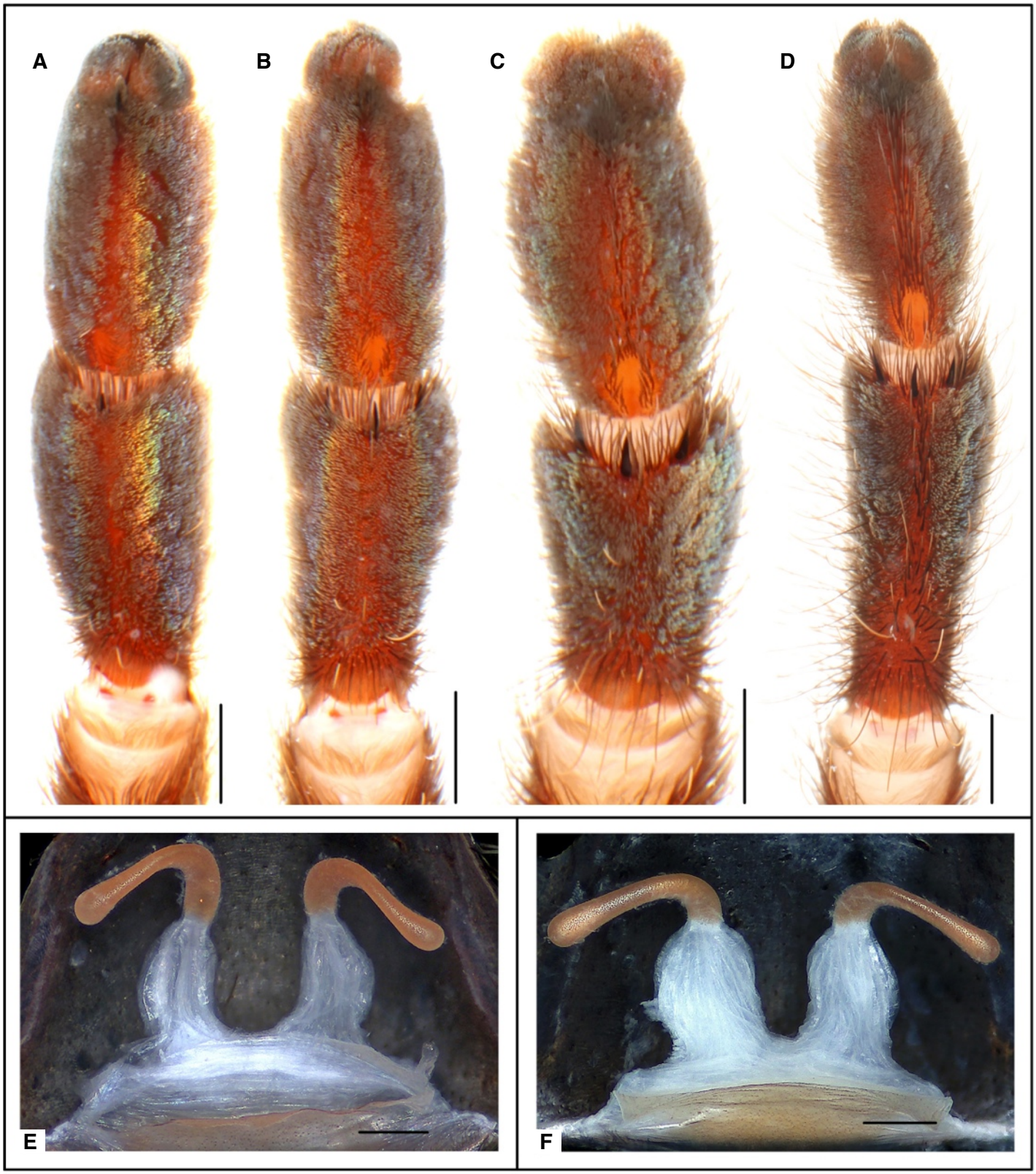

Fig. **5**. *Selenocosmia meghalayensis* **sp**. **nov**., holotype female (NRC-AB-0657). **A-D**. Metatarsal and tarsal scopae of legs I-IV. Spermathecae (NRC-AB-0657). **E**. Dorsal view. Spermathecae (NRC-AB-0658). **F**. Dorsal view. Scale bar: A-D. 1 mm; E-F. 0.5 mm.

process in *Selenocosmia javanensis*). While morphological evidence alone cannot resolve the long disputed generic delimitation and relationship between *Selenocosmia* and *Selenopelma*, we have followed the current standard of *Selenocosmia* and assigned our new species herein.

Indian *Selenocosmia* is now represented by three valid species: *Selenocosmia meghalayensis* **sp**. **nov**.; *Selenocosmia sutherlandi* Gravely, 1935; and *Selenocosmia kulluensis* Chamberlin, 1917. These species are distributed across two major biogeographic regions: Northeast India and the Himalayan range. *Selenocosmia meghalayensis* **sp**. **nov**. is described based on three female specimens collected from East Khasi Hills and South Garo Hills (Meghalaya, Northeast India), at an elevation of 741 and 231 m, respectively. In contrast, the remaining two species are known only from male specimens. *Selenocosmia sutherlandi* was described from Kalimpong in the Darjeeling district in the Eastern Himalayas, at an elevation of 1,017 m, while *Selenocosmia kulluensis* was described from the Kullu region of northern India in the Western Himalayas, at an elevation of 1,230 m. These latter two species occur in

Fig. **6**. Habitats. **A-B**. Micro-habitat. **C-D**. Entrances of different burrows.

geographically disjunct regions separated by geographical barriers such as the Brahmputra river and mountains and are primarily known from historical collections, with few subsequent records or modern redescriptions.
Overall, the taxonomy of *Selenocosmia* remains poorly resolved, with longstanding uncertainty regarding its delimitation and relationships with allied genera. The present study is also constrained by some limitations. First, the description of *Selenocosmia meghalayensis* **sp**. **nov**. is based solely on female specimens, while the two previously known Indian species (*Selenocosmia sutherlandi* and *Selenocosmia kulluensis*) are known only from male specimens, preventing direct comparison of both sexes across the Indian representatives of the genus. Second, the absence of molecular data limits our ability to test the phylogenetic placement of the new species and evaluate the broader generic boundaries within Selenocosmiinae. These gaps highlight the need for integrative taxonomic studies combining morphology and molecular phylogenetics, along with targeted field surveys to obtain both sexes and fresh material from across the distribution range of Indian and Southeast Asian *Selenocosmia*. Such efforts will be paramount to clarify species boundaries, resolve generic relationships, and achieve a stable taxonomic framework for this complex group of tarantulas.

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Résumé

Sanap R., Kadam G., Thackeray T., Rajkumar M. & Satam Y., 2026. – Une nouvelle espèce du genre *Selenocosmia* Ausserer, 1871 (Araneae : Theraphosidae) des régions karstiques du Meghalaya, en Inde. *Faunitaxys*, 14(46) : 1 – 9.

Nous décrivons une nouvelle espèce : *Selenocosmia meghalayensis* **sp**. **nov**., provenant des collines de l'Est de Khasi, dans l'État de Meghalaya (nord-est de l'Inde), à partir de trois spécimens femelles. Cette nouvelle espèce se distingue par une combinaison unique de caractères morphologiques, notamment la structure des spermathèques, ainsi que par des caractères somatiques tels que la coloration, la pilosité et les dimensions morphométriques. Des descriptions détaillées et des mesures sont fournies. Des notes sur l'habitat et une carte de répartition sont également incluses.

Mots-clés. – Araneae, *Selenocosmia*, théraphosidé fouisseur, tarentule, calcaire, taxonomie, description, nouvelle espèce, bleu métallique, Inde.

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SOMMAIRE

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Illustration de la couverture :

Selenocosmia meghalayensis **sp**. **nov**., live female, holotype.

Crédits:

Rajesh Sanap : Fig. 2-6.

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